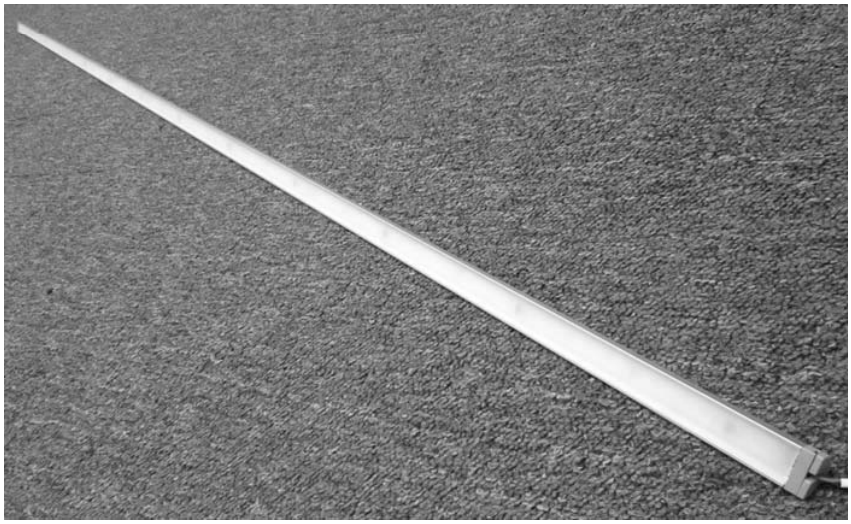
Report of Test

LLI-14272-5

OptoLum "EcoLine" Extruded Aluminum Luminaire. Cat No. EL-AL-L--358UOD-A072000
Triangular extruded housing with extents ~ 72.375" x 1.0" x 0.75".
Twelve white PCB sections marked "OptoLum EcoLine LO R4.1" with five LEDs each on 1.187" centers.
Flat opal plastic lens. Luminous Opening ~ 72 x 0.75".
One remote "High Perfection Tech LP1090-24-GG-290 100-240Vac 47-63Hz" driver.
Tested at 120V 60Hz with luminous opening horizontal facing nadir.



Performance Summary

Total Light Output	1605 lm	Min Power Factor	0.81 @ 277 V
Luminaire Power	50.3 W	Max THD(i)*	15.8 % @ 277 V
Luminous Efficacy	31.9 lm/W	SC along*, across*	1.24 , 1.22
CCT	3410 K	SC Diagonal*	1.34
CIE(x,y) 1931	(0.408, 0.386)		
CRI	85		
0-60° Zonal Flux %	81.0 %		

PREPARED FOR : OptoLum Inc., 1407 W 10th Place, Tempe, AZ

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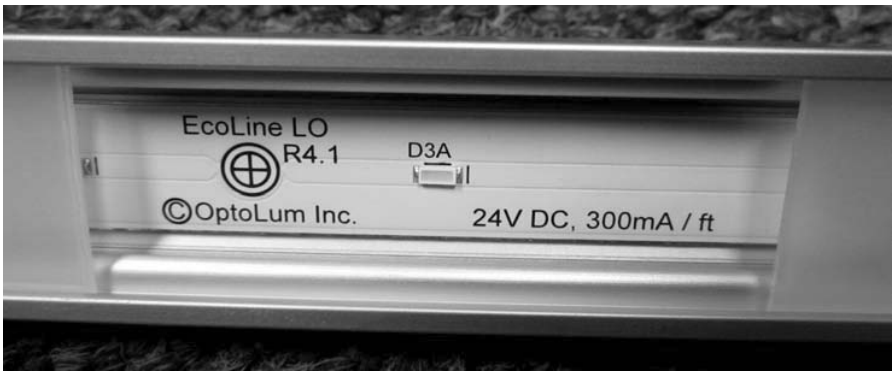

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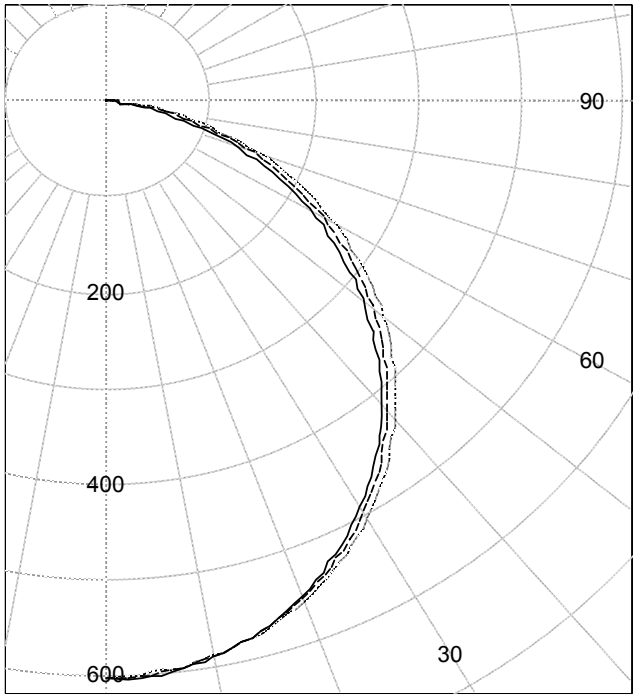
Legend: C0-Solid, C45-Dashed, C90-Grey (cd)



(Two plane symmetry) C0-C90

INTENSITY SUMMARY (cd)

	C-Plane					Flux
Gamma	C0	C22.5	C45	C67.5	C90	(lm)
0.0	603	603	603	603	603	
5.0	600	598	599	602	597	57
10.0	590	588	589	593	589	
15.0	573	571	573	578	575	162
20.0	550	550	553	559	556	
25.0	522	522	526	533	531	243
30.0	489	490	495	503	502	
35.0	452	453	460	468	469	288
40.0	411	413	421	430	432	
45.0	368	371	379	389	392	293
50.0	322	325	334	345	348	
55.0	275	278	288	298	303	258
60.0	226	230	240	251	255	
65.0	176	181	191	201	205	189
70.0	126	131	142	151	155	
75.0	76	82	93	102	105	97
80.0	35	37	46	56	57	
85.0	12	11	12	18	19	19
90.0	0	0	0	0	0	

ZONAL FLUX AND PERCENTAGES

Zone	Flux (lm)	% Lamp	% Luminaire
0-30	462	N / A	28.8
0-40	750	N / A	46.7
0-60	1300	N / A	81.0
0-90	1605	N / A	100.0
40-90	855	N / A	53.3
60-90	305	N / A	19.0
90-180	0	N / A	0.0
0-180	1605	N / A	100.0

Total Light Output = 1,605 lm

Signed: E Southgate

Eric Southgate
Authorized Signatory

Date of test 9-Oct-2014
Date of report 14-Oct-2014

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Intensity data (cd)

	C-Plane				
Gamma	**C0**	**C22.5**	**C45**	**C67.5**	**C90**
0.0	603	603	603	603	603
2.5	603	601	601	604	600
5.0	600	598	599	602	597
7.5	596	594	594	598	594
10.0	590	588	589	593	589
12.5	582	581	582	586	582
15.0	573	571	573	578	575
17.5	563	561	564	569	566
20.0	550	550	553	559	556
22.5	537	536	540	547	544
25.0	522	522	526	533	531
27.5	506	506	511	519	517
30.0	489	490	495	503	502
32.5	471	472	478	486	486
35.0	452	453	460	468	469
37.5	432	434	441	450	450
40.0	411	413	421	430	432
42.5	390	392	400	410	412
45.0	368	371	379	389	392
47.5	345	348	357	367	370
50.0	322	325	334	345	348
52.5	299	302	311	322	326
55.0	275	278	288	298	303
57.5	251	254	264	275	279
60.0	226	230	240	251	255
62.5	201	206	215	226	230
65.0	176	181	191	201	205
67.5	151	156	166	176	181
70.0	126	131	142	151	155
72.5	101	106	117	126	130
75.0	76	82	93	102	105
77.5	53	57	69	78	80
80.0	35	37	46	56	57
82.5	21	22	26	36	37
85.0	12	11	12	18	19
87.5	6	5	5	5	6
90.0	0	0	0	0	0

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Coefficients Of Utilization * - Zonal Cavity Method
Effective Floor Cavity Reflectance 0.20

RC			80	80			70	70			50	50			30	30			10	10		0
RW	70	50	30	10	10	70	50	30	10	10	50	30	10	10	50	30	10	10	50	30	10	10	0	0
0		119	119	119	119		116	116	116	116		111	111	111		106	106	106		102	102	102		100
1		109	105	101	97		107	102	99	95		98	95	92		94	92	89		91	89	87		85
2		100	91	85	79		97	90	84	78		86	81	77		83	79	75		80	76	73		71
3		91	81	73	66		88	79	72	66		76	70	64		73	68	63		71	66	62		60
4		83	71	63	56		81	70	62	56		68	61	55		65	59	54		63	58	54		51
5		77	64	55	49		75	63	54	48		61	53	48		59	52	47		57	51	47		45
6		71	58	49	42		69	57	48	42		55	47	42		53	47	41		52	46	41		39
7		66	52	44	38		64	51	43	37		50	42	37		48	42	37		47	41	37		35
8		61	48	39	34		60	47	39	33		46	38	33		44	38	33		43	37	33		31
9		57	44	36	30		56	43	35	30		42	35	30		41	34	30		40	34	30		28
10		54	40	33	27		52	40	32	27		39	32	27		38	32	27		37	31	27		25

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LM-79 Performance Data

Spectral	CIE 1931 (x, y) (1)	(0.408, 0.386)	
	CIE 1976 (u', v') (1)	(0.239, 0.510)	
	Correlated Color Temperature (CCT) (1)	3410	K
	Color Spatial Uniformity (2)	0.0012	
	Color Rendering Index (Ra) (1)	85	
	Special CRI 9 (R_9) (1),(3)	28	
	Distance from Planckian Locus (Duv) (1),(3)	-0.0024	
	Scotopic/Photopic Ratio (1),(3)	1.54	

Electrical	Voltage	120	V	(Setpoint 1)
	Frequency	60	Hz	
	Current	0.4273	A	
	Power	50.27	W	
	Power Factor	0.980		
	Current THD	11.25	%	
	Voltage	277	V	(Setpoint 2)
	Frequency	60	Hz	
	Current	0.2418	A	
	Power	54.14	W	
	Power Factor	0.808		
	Current THD	15.76	%	

Performance data in accordance with IESNA LM-79-08. Spectral calculations are for a CIE 2° observer
Photometric and spectral values were measured at Setpoint 1
(1) Value is computed from the weighted average of the spatial measurements
(2) Value is the maximum deviation of the spatial u' and v' measurements from the weighted average
(3) Quantity is in addition to the scope of IESNA LM-79-08

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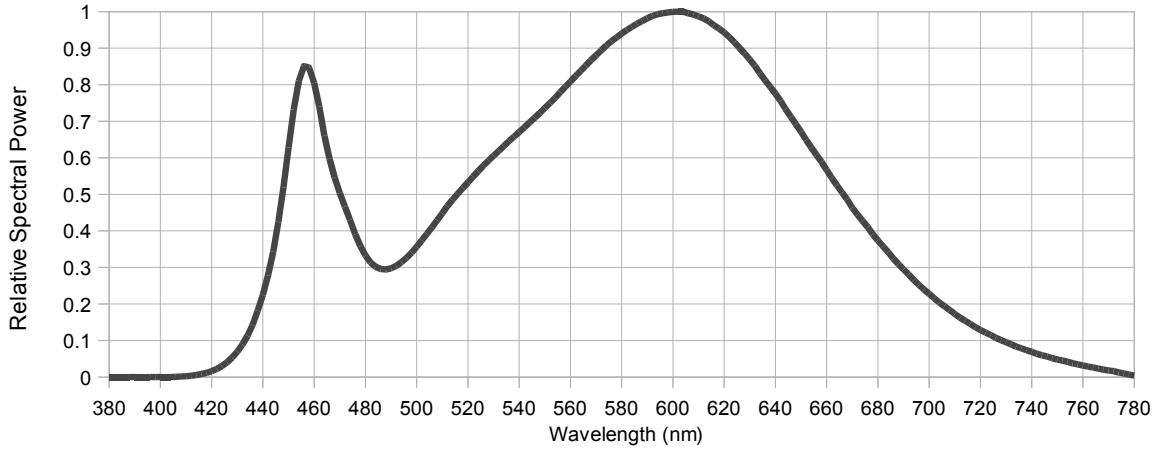
LM-79 Performance Data

Summary Relative Spectral Irradiance Distribution (wavelength – nm, irradiance – relative to peak = 1)

380	0.00E+00	480	3.33E-01	580	9.40E-01	680	3.74E-01
385	0.00E+00	485	2.99E-01	585	9.63E-01	685	3.33E-01
390	2.90E-05	490	2.98E-01	590	9.82E-01	690	2.95E-01
395	0.00E+00	495	3.20E-01	595	9.94E-01	695	2.59E-01
400	1.16E-05	500	3.57E-01	600	1.00E+00	700	2.28E-01
405	3.65E-04	505	4.01E-01	605	9.98E-01	705	1.99E-01
410	2.24E-03	510	4.48E-01	610	9.87E-01	710	1.73E-01
415	6.84E-03	515	4.93E-01	615	9.68E-01	715	1.50E-01
420	1.60E-02	520	5.33E-01	620	9.43E-01	720	1.29E-01
425	3.53E-02	525	5.71E-01	625	9.08E-01	725	1.11E-01
430	6.93E-02	530	6.06E-01	630	8.69E-01	730	9.53E-02
435	1.28E-01	535	6.39E-01	635	8.22E-01	735	8.08E-02
440	2.25E-01	540	6.71E-01	640	7.76E-01	740	6.88E-02
445	3.84E-01	545	7.03E-01	645	7.23E-01	745	5.77E-02
450	6.28E-01	550	7.36E-01	650	6.71E-01	750	4.79E-02
455	8.30E-01	555	7.72E-01	655	6.18E-01	755	3.96E-02
460	8.05E-01	560	8.09E-01	660	5.67E-01	760	3.15E-02
465	6.29E-01	565	8.45E-01	665	5.15E-01	765	2.45E-02
470	5.04E-01	570	8.80E-01	670	4.63E-01	770	1.81E-02
475	4.10E-01	575	9.13E-01	675	4.19E-01	775	1.12E-02
						780	3.91E-03



* The spectral power distribution combines the weighted spectral power distributions of all spatial measurements.

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LM-79 Performance Data

Spatial measurements

Vertical angle (deg)	CIE 1976 (u',v') coordinates Horizontal 0 plane	Horizontal 90 plane
0	(0.239, 0.509)	(0.239, 0.509)
10	(0.239, 0.510)	(0.239, 0.509)
20	(0.239, 0.510)	(0.239, 0.509)
30	(0.239, 0.510)	(0.239, 0.510)
40	(0.239, 0.510)	(0.239, 0.510)
50	(0.239, 0.510)	(0.239, 0.510)
60	(0.239, 0.510)	(0.239, 0.511)
70	(0.239, 0.510)	(0.240, 0.511)
80	I <= 10 %	I <= 10 %
90	I <= 10 %	I <= 10 %

Spatial measurements

Vertical angle (deg)	CIE 1976 (u',v') coordinates Horizontal 0 plane	Horizontal 90 plane
90	I <= 10 %	I <= 10 %
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

Test procedure

All measurements were performed in an environmentally controlled laboratory employing suitable baffling to minimize stray light. The sample was mounted in its normal operating orientation on a rotating mirror goniophotometer and operated from a stabilized supply. The photometric output was monitored and measurements were performed once stability was achieved.

The goniophotometer was used to measure the spatial distribution of both luminous intensity and, in conjunction with a spectroradiometer, spectral irradiance. The distribution locus comprises points in two or more planes (as indicated in the table above) at no more than 10º vertical intervals. The CIE (x,y) coordinates and other derived metrics (CIE (u', v'), CCT and CRI) are calculated from the weighted sum (weighted for intensity and represented solid angle) of the measured spectral irradiances.

		Stabilization Time	2.25 hour
Sample Orientation	Horizontal	Total Operation Time	4.25 hour

Equipment and uncertainties

LightLab International R80A C-gamma rotating mirror goniophotometer with a test distance of 8 m.

Luminous Intensity	± 4 %	Temperature	± 1 °C
Luminous Flux	± 4 %	Luminous Efficacy	± 4.5 %
Horizontal, Vertical Angles	± 0.25º		

PhotoResearch PR-670 spectroradiometer (380 - 780 nm., 2 nm. per pixel) measuring at a distance from the sample deemed greater than five times the maximum observed luminous opening dimension.

CIE (x, y) coordinates	± 0.003	CCT	± 100 K
CIE (u', v') coordinates	± 0.002	CRI (Ra)	± 2
Δ (u', v') Color difference	± 0.001	Scotopic / Photopic Ratio *	± 0.02
Relative Spectral Irradiance *	± 2 %	R9 *	± 2

Yokogawa WT210 power meter connected in circuit to the sample electrical supply

Voltage	± 0.5 %	Frequency *	± 0.1 Hz
Current	± 0.5 %	Power	± 0.5 %
Current THD *	± 3 %	Power Factor	± 0.02

This report contains data that are not covered by the NVLAP accreditation. Quantities marked with * are not covered.
IESNA LM-79-08 Calculator v4.9 (23rd Sep 2014)

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Tested at 120V 60Hz with luminous opening horizontal facing nadir.

Test Distance: 8.0 metres

Test Temperature: 24.8 degrees Celsius

Significance: The laboratory has not participated in the selection of samples to be tested. All testing is performed on the understanding that the significance of the report is limited to the extent that the test sample is representative of production units.

Test Procedure: Tested in accordance with the applicable sections of IESNA publication LM-79-08.

Notes: The luminous intensity values, and other derived quantities, contained in this report are based on the absolute data, as measured.

Prorating the performance of the sample for the use of other component combinations (such as lamp / LED / Ballast / driver), or for use in different environmental conditions than that tested, may produce erroneous results.

This report is free of erasures and corrections.

Photometric intensity values are reported using the CIE Gamma coordinate system as defined in CIE publication number 121.

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